Exhibit 9

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN FRANCISCO DIVISION

ORACLE AMERICA, INC.

         Plaintiff,

        v.

GOOGLE, INC.

        Defendant.

Case No. 3:10-cv-03561-WHA

OPENING EXPERT REPORT OF RODERIC G. CATTELL, PH.D.

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negative consequences, and would be contrary to the expectations and demands of the programming community.

31.   Re-implementing APIs is commonplace in the computing industry, and has long been consistent with custom and practice in the computing industry. Indeed, Oracle has itself reimplemented IBM's SQL APIs in its relational database products.

III.   APIS AND THE VALUE OF THEIR REUSE

35.   APIs allow software to communicate with other software. An API for a given piece of software reduces that software to its essential functionality, defining the operations the software is willing to perform for other software; the details of the inputs it will accept in performing those operations; the outputs it will generate as a result; and certain other specific details, such as ways the software might signal that an error has occurred.

36.   To take an example, the hardware chips inside of a computer typically do not come preprogrammed with the ability to perform mathematical functions such as calculating a square root, or choosing the larger of two numbers. Those functions, however, are very commonly needed by computer programmers, and rather than requiring that a developer write a small program to perform those tasks every time they are needed, it makes more sense for someone to write them once, to compile that functionality into what a developer typically calls a "library," and to publish APIs for accessing that functionality.

37.   Those APIs are, to computer scientists, simply part of the vocabulary that they can use when programming. For example, I know that if I am programming in the Java programming language, I can use the sqrt method, which is in the Math class of the java.lang package, to calculate the square root of a number. And I know that if I wanted to calculate the square root of a variable called x, I would include the text "Math.sqrt(x)" in my program. Similarly, when programming in the Java programming language, if I want to choose the larger

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language (including APIs from the Java core libraries) for the Android platform has greatly increased the developer community and market for Java. If Google were forced to change its approach to avoid an API copyright conflict, in my opinion that would be bad for everyone, including Oracle, whether Oracle realizes that or not.

46.   Furthermore, allowing companies to create fiefdoms and control who can re-implement APIs is, in my opinion, bad for programming. To offer an analogy, allowing the company that first created an API to prevent others from re-implementing the API would be similar to allowing the first company that came up with a stick shift and a steering wheel to prevent other car companies from using the same interface to control their cars. Imagine if every time you wanted to buy a different make of car, you had to learn a new system for turning and shifting. Similarly, imagine if the first company to use the QWERTY layout for a typewriter could have prevented others from using the same layout—that would have made typewriters far less useful for everyone. As yet another example, if the first company that decided to have a "File" menu in its computer program with a "Print" option could have prevented later companies from using that interface for their programs, we would all constantly be trying to remember where the "Print" command is in every program we used, rather than being able to rely on the common interface that we have today. All of these examples highlight why APIs should be re-implementable, and how and why doing so is beneficial to consumers and the marketplace.

47.   These are not simply my personal opinions. Based on my many years of experience in computer science, I believe these opinions are widely held by computer scientists. I know this from my decades of experience working closely with other computer scientists, including computer scientists at Sun. I also know this from having joined an amicus brief of many prominent computer scientists during the briefing of Google's petition for a writ of

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certiorari to the United States Supreme Court in this case[1] (that brief focuses on whether APIs are "copyrightable," but from the perspective of a computer scientist, the question is whether APIs can be freely re-implemented, not the legal doctrine that is the reason for that freedom). In addition, I know this based on the myriad examples of companies re-implementing APIs in the computing industry, such that it can safely be described as a common practice, and one that is consistent with long-standing industry custom.

48.   For example, IBM's first personal computers included a BIOS—a basic input/output system. This was firmware that included computer code used to perform hardware initialization when a computer was turned on to provide runtime services for the operating system and computer programs. Many companies developed BIOSes that were compatible with the IBM BIOS without permission from IBM. This allowed the development of a thriving market for "IBM compatible" personal computers.

49.   As another example, much of the modern Internet is powered by computers running the Linux operating system. The Linux operating system, and in fact multiple variants of the Linux operating system, re-implement hundreds of APIs from Unix. This allowed Linux to flourish, because developers were easily able to adapt code they had already written, and were able to write new programs using the knowledge they had from writing other Unix or Linux programs.

50.   SQL is another good example, and one I know well from my experience in the database field. SQL stands for structured query language, and is an interface for accessing information in a relational database. SQL allows a programmer to write commands such as "SELECT AVG(SALARY) FROM EMPLOYEES", which computes the average employee

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[1] The brief is publicly available at https://www.eff.org/document/amicus-brief-computer-scientists-scotus.

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salary. SQL includes dozens of such commands that can be used by SQL programmers. IBM

created SQL, but it has since been re-implemented by countless other database companies; in

fact, Oracle was one of the first to do so. Re-implementing SQL allowed these other database

companies to satisfy the expectations and demands of the database programming industry, and as

a result, database programmers can leverage their knowledge of SQL to program databases for

many systems, rather than having to learn an entirely new language for every database system.

SQL is now implemented on database systems from IBM, Microsoft, MySQL, Oracle,

PostgreSQL, Sybase, SAP, Teradata, and others.

51.   The success of SQL as a common API for relational databases was one of the

motivations for the ODMG's creation of a common API for object databases—the companies

involved recognized that having a common API would be better for customers, and better for the

object database market generally. Having a common API for object databases would meet the

demands and expectations of object database programmers, just as SQL provided a common API

for relational database programmers. The ODMG companies anticipated that if their object

database products shared a common API, that would increase the market for their products,

because developers would be able to use the common API to program many different object

databases.

52.   Programs known as "emulators" provide yet another example. For example, there

is a program called WINE that allows users to run programs that were created for Microsoft

Windows on a computer that is instead running the Linux or Mac operating system. To do this,

the WINE developers had to re-implement the Windows APIs that Windows programs use to

perform tasks such as creating windows, menus, and graphic displays. This means that

consumers who have purchased programs for Windows computers can use them on Linux or
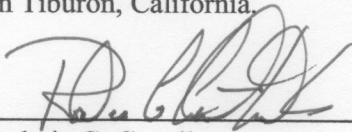
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Mac computers, too. WINE is not the only emulator out there—there are many such emulators available for other purposes as well, for example to emulate video game APIs.

53.   Indeed, it is commonplace for computer scientists to re-implement APIs that were created by others. For example, many programming languages that existed prior to the Java language have used "sqrt" as the API for calculating square roots, including FORTRAN, COBOL, ALGOL, Pascal, C and C++. That is almost certainly why my colleagues at Sun chose that method name for the square root API in the Java core libraries, even though a method name like getSquareRoot (starting with a verb, and using mixed case to indicate words) would have been more consistent with the naming conventions for Java methods. This is not an isolated example—any computer scientist who knows multiple computer languages can offer examples of commands that are very similar between languages, just as "sqrt" appears in many languages as the function or method name used to invoke the functionality of calculating a square root. For example, "sin" and "cos" were used in many programming languages that existed before the Java language for the mathematical sine and cosine trigonometric functions (e.g., FORTRAN, COBOL, ALGOL, Pascal, C and C++) , and "printf" is commonly used for printing formatted output (e.g., C and C++). This makes it easier for programmers to learn new programming languages.

IV.   CONCLUSION

54.   For all of these reasons, it is my opinion that allowing Google to re-implement Java APIs would be in the public interest, would satisfy industry expectations and demands, and would be consistent with longstanding custom and practice in the computing field.

Executed on the __8th__ of January, 2016 in Tiburon, California.

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Roderic G. Cattell